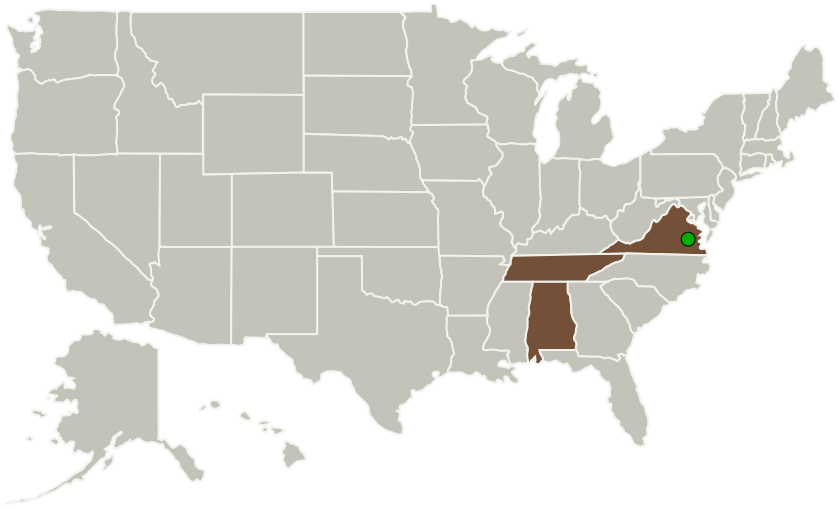
Structural Nervous System, Phase I

Completed Technology Project (2016 - 2017)

Project Introduction

GTL's SNS technology aids in the operation of new or existing structural health monitoring (SHM) systems by integrating data and power pathways into the structure. The use of this technology within a composite structure would allow engineers to place sensors from an SHM system directly where they are needed on a structure with instant power. GTL's SNS technology offers the potential for developers to have substantial gains in vehicle performance as well. Embedding power and data transmission within the structure reduces the mass of the system by eliminating the need for wires as well the additional vehicle mass required to contain them. In the proposed effort GTL will perform a series of feasibility studies to assess and optimize the SNS technology. This work will result in the development of the SNS architecture to be employed in the Phase II effort. In this effort, GTL will perform several design iterations of the SNS technology and develop test panels for testing. At the end of the Phase II effort, GTL will deliver an SNS test panel to NASA for evaluation.

Primary U.S. Work Locations and Key Partners



Structural Nervous System, Phase I

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Organizations Performing Work	Role	Type	Location
Gloyer-Taylor Laboratories LLC	Lead Organization	Industry	Tullahoma, Tennessee
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia
Southern Research Institute	Supporting Organization	Academia	Birmingham, Alabama

Primary U.S. Work Locations	
Alabama	Tennessee
Virginia	

Project Transitions

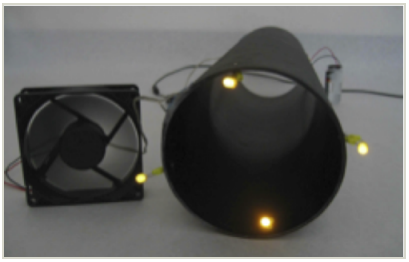
June 2016: Project Start

June 2017: Closed out

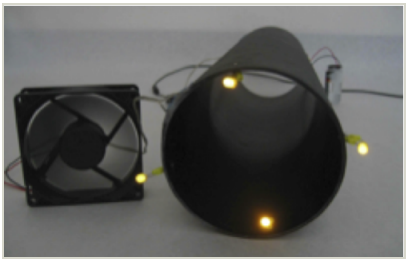
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139517)*

Images



Briefing Chart Image
Structural Nervous System, Phase I *(https://techport.nasa.gov/image/126964)*



Final Summary Chart Image
Structural Nervous System, Phase I Project Image *(https://techport.nasa.gov/image/135933)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Gloyer-Taylor Laboratories LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Zachary Taylor

Co-Investigator:
Zachary M Taylor

Structural Nervous System, Phase I

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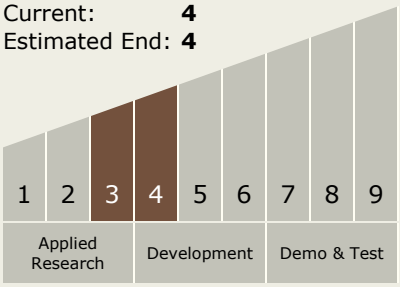
Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.2 Structures
    - TX12.2.3 Reliability and Sustainment

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System